

## Claims

[c1] 1. A storage controlling and judging method of a flash memory for writing data to said flash memory, the flash comprising a plurality of sets of mother and child blocks, each set of said mother and child block having a mother block corresponding to a child block for increasing data storage speed to said flash memory and using a correlation between said mother and child blocks of said sets of mother and child blocks to substantially reduce erasing frequency of said flash memory for extending a service life thereof; the method comprising:

- (a) receiving writing command;
- (b) checking whether an address to write is in said sets of mother and child block, wherein if no, proceed to step (c);
- (c) checking whether said flash memory has a set of mother and child block, wherein if yes, proceed to step (d);
- (d) judging whether numbers of used mother and child blocks reach a preset number in said manager, wherein if yes, a set of mother and child block is found and combined to create a new block, a blank block is found and defined as a child block, and a block defined for writing

as a mother block, and then said mother block and said child block are combined to create a new set of mother and child block, then proceed to step (e);  
(e) executing the judging method for writing;  
(f) executing writing from a page in said child block of said set of mother and child block;  
(g) executing writing into said page;  
(h) judging whether a written page is a last page in said child block, wherein if no, proceed to step (i); and  
(i) judging whether to continue writing into pages, wherein if no, proceed to step (j) f;  
(j) ending the writing operation.

- [c2] 2. The storage controlling and judging method of flash memory according to claim 1, wherein the writing operation to step (l) if no in said step (c), wherein a blank block is found and defined as a child block and said mother block and child block are combined as a new set of mother and child block, then proceed to step (f).
- [c3] 3. The storage controlling and judging method of flash memory according to claim 1, wherein the writing operation proceeds to step (k) if no in said step (d), wherein a blank block is found and defined as a child block and a block for writing is defined as a mother block, then said mother block and child block are combined as a new set of mother and child block, then proceed to step (f).

[c4] 4. The storage controlling and judging method of flash memory according to claim 1, wherein the writing operation proceeds to step (m) if yes in said step (h), wherein said mother and child block are combined as a new set of mother and child block and said set of mother block and child block is erased, then proceed to step (n) to judge whether or not to continue writing into pages, if yes, proceed to step (b).

[c5] 5. The storage controlling and judging method of flash memory according to claim 4, wherein said step (n) is adapted for judging whether or not to continue writing into pages, if no, proceed to step (j).

[c6] 6. A storage controlling and judging method of flash memory of a flash memory for writing data into said flash memory, said judging method comprising:

- (i) starting the judging method;
- (ii) checking whether a starting page R for writing is or ahead a valid starting page N in a child block of a set of mother and child block, wherein if yes, proceed to step (iii);
- (iii) comparing whether an ending page S for writing is or behind an valid ending page M in said child block of said set of mother and child block, wherein if yes, proceed to step (iv);

(iv) erasing said child block and replacing a new set of block to create a child block and write data therein;  
(v) ending the judging method.

[c7] 7. The storage controlling and judging method of flash memory according to claim 6, wherein if no in said step (ii), then whether said page R is behind said validpage M in said child block of said set of mother and child block is determined, wherein if yes, proceed to step (vi), wherein from page (M+1) to (R-1) is copied from said mother block of said set of mother and child block to said child block, and continued to write data therein, if not, proceed to step (vii), wherein said mother block and said child block of said set of mother and child block are combined as a new mother block, then a new child block is created to join said new mother block as a new set of mother and child block to continue writing data by proceeding to step (v).

[c8] 8. The storage controlling and judging method of flash memory according to claim 6, wherein if no in step (iii), proceed to step (vii).